Indicator Sponge at a Larger Impact

The Indicator Sponge can be taken beyond the experiment to be used as a universal indicator. If a spill ever occurs in the chemistry lab, the indicator sponge can be used to discover the identity of the spill and aid in safety when cleaning up the spill. The indicator sponge can become part of the chemistry lab safety procedure of spills.

Harmony Public Schools

Project Based Learning (PBL): Chemistry

Indicator Sponge

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Introduction:

In chemistry, there is a sort of "mystery" or "magic" of experiments that help explain principles and subjects of chemistry. In the Indicator Sponge experiment, it reveals the study of the change and balance between acids and bases. It shows how things like color can indicate reactions and changes in an experiment. So, in this experiment, it will question how can color indicators be used to aid in discovering the structure of a solution (solid or base)?

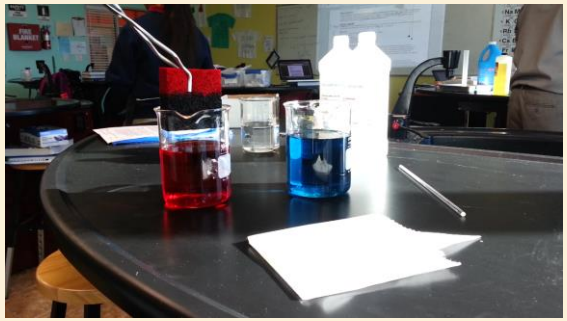
Materials

1. Red and Blue Food Coloring
2. HCl (Hydrochloric Acid) 1 M, 100 ml
3. NaOH (Sodium Hydroxide) 1 M, 100 ml
4. Potassium Chloride, 30 g
5. Two Large Beakers
6. Sponge
7. Tongs (not needed but can be used it wanted)

Experiment

Procedure:

1. In one of the large beakers, add 50 ml of HCl solution to it and 3/4 of it with tap water.
2. Add red food coloring to the solution until it is a deep red.
3. In the other large beaker, add 50 ml of NaOH solution into it with 3/4 tap water as well.
4. Add blue food coloring into the new solution until it is a deep blue.
5. Slowly place the sponge halfway into the acid solution (HCl) and record observations. When pulling out sponge, squeeze out solution with tongs or with gloves on as much as possible.
6. Next, place the sponge into the base solution (NaOH) and record observations. To remove sponge, squeeze as much of the solution out with tongs or with gloves on.



Safety Regulations:

- Wear goggles, and Chemical-resistant apron and gloves because of the HCl's toxicity and NaOH's corrosive to body organs.

Explanation

The Congo Red solution added into the sponge allows the sponge to change color based on the pH level within the solutions of HCL and NaOH. The Congo red indicator strip goes from pH range 3.0 (Blue) to 5.0(red). HCL is in the color of red along the pH strip and NaOH is the color blue along the pH strip.

QR Codes

Video Presentation:

PBL Website: